

CLAIMS

1. A rolling bearing having outer and inner races and rolling elements which are rotatably put in between the outer and inner races, with a lubricant sealed into the annular space formed by the rolling elements and the races, which is characterized in that said lubricant comprises a base oil, a thickener, and a pH adjustor and has its hydrogen ion exponent pH adjusted in a range of from 7 to 13.

2. A rolling bearing according to claim 1, characterized in that said base oil has a dynamic viscosity of 40 to 400 mm²/sec at 40°C and comprises an oil selected from any one of mineral oils, synthetic oils, and natural oils.

3. A rolling bearing according to claim 1, characterized in that said thickener is selected from at least one of a metal soap, a complex metal soap, and a urea compound.

4. A rolling bearing according to claim 3, characterized in that said urea compound is a diurea compound comprised of an amine residue selected from at least one of a cyclohexyl group, a C_n (n=7 to 12) alkylcyclohexyl group, a C_n (n=8 to 20) straight-chain alkyl group and an isocyanate residue comprising a divalent C_n (n=6 to 15) aromatic ring-containing hydrocarbon group.

5. A rolling bearing according to claim 1, characterized in that said pH adjustor is an alkaline substance selected from at least one of an amine compound, an organic metal salt, an organic acid metal salt, and an alkaline inorganic compound.

6. A rolling bearing according to claim 5, characterized in that said amine compound is at least one of primary to tertiary amine compounds containing an aliphatic hydrocarbon group, an alicyclic hydrocarbon group or an aromatic hydrocarbon group, which each has carbon atoms C_n ($n=1$ to 24), or a derivative thereof.

7. A rolling bearing according to claim 5, characterized in that said organic metal salt or organic acid metal salt as a pH adjustor has a C_n hydrocarbon chain ($n=6$ to 24) which constitutes the alkyl group and a metal element, which constitutes the metal salt, selected from at least one of an alkali metal, an alkaline earth metal, aluminum and zinc.

8. A rolling bearing according to claim 5, characterized in that said alkaline inorganic compound is selected from at least one of a metal hydroxide, a metal carbonate, a metal borate, and a metal silicate.

9. A rolling bearing having outer and inner races and rolling elements which are rotatably put in between the outer and inner races,

with a lubricant sealed into the annular space formed by the rolling elements and the races, which is characterized in that said lubricant comprises a base oil, a thickener, a pH adjustor, and a reaction film forming agent capable of forming a reaction film on the raceway surface or the rolling surface which is selected from at least one of an organic metal salt and an ash-free dialkyldithiocarbamic acid and has its hydrogen ion exponent pH adjusted in a range of from 5 to 13.

10. A rolling bearing according to claim 9, characterized in that said organic metal salt as a reaction film forming agent is selected from at least one of a dialkyldithiocarbamic acid compound, a dialkyldithiophosphoric acid compound, an organozinc compound, and a zinc alkylxanthogenate or a methylenebisdialkyldithiocarbamic acid.

11. A rolling bearing having outer and inner races and rolling elements which are rotatably put in between the outer and inner races, with a lubricant sealed into the annular space formed by the rolling elements and the races, which is characterized in that said lubricant comprises a base oil, a thickener, a pH adjustor, and 0.001 to 3 wt% of particles comprising an inorganic compound having an average particle size of 2 μm or smaller and has its hydrogen ion exponent pH adjusted in a range of from 5 to 13.

12. A rolling bearing according to claim 11, characterized in that said inorganic compound is selected from at least one of a metal oxide, a metal hydroxide, a metal carbonate, or a hydrate thereof; a metal nitride; a metal carbide; a clay mineral; diamond; and a solid lubricant.

13. A rolling bearing having outer and inner races and rolling elements which are rotatably put in between the outer and inner races, with a lubricant sealed into the annular space formed by the rolling elements and the races, which is characterized in that said lubricant comprises a base oil, a pH adjustor, and a thickener selected from at least one of an aromatic diurea compound and a non-aromatic diurea compound and that said lubricant has its hydrogen ion exponent pH adjusted in a range of from 5 to 13.

14. A rolling bearing according to claim 13, characterized in that the aromatic amine residue contained in said aromatic diurea compound is a C_n ($n=7$ to 12) aromatic ring-containing hydrocarbon group.

15. A rolling bearing according to claim 13, characterized in that the non-aromatic amine residue contained in said aromatic diurea compound and said non-aromatic diurea compound comprises at least one of a cyclohexyl group, a C_n ($n=7$ to 12) alkylcyclohexyl group, and a C_n ($n=8$ to 20) straight-chain alkyl group and that the

diisocyanate residue is a divalent C_n ($n=6$ to 15) aromatic ring-containing hydrocarbon group.

16. A rolling bearing according to claim 13, characterized in that the aromatic amine residue and the non-aromatic amine residue contained in said aromatic diurea compound and said non-aromatic diurea compound are in the following relationship:

$$\text{Molar ratio of aromatic amine residue} / (\text{molar ratio of aromatic amine residue} + \text{molar ratio of the non-aromatic amine residue}) = 0.5 \text{ to } 0.95$$

17. A rolling bearing according to claim 13, characterized in that the content of said thickener in the lubricant is 8 to 35 wt%.